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Strategies for Improving Highway Safety Data

Forrest Council (BMI-SG/VHB)

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Safety Data
"It's Not Just Crash Data…"

- Roadway Characteristics
- Operations (volumes, mix, turning counts)
- Roadside Features
- Driver History and Exposure (e.g., age)

- Ability to link to crash data

Role of Safety Data

- Make the *best* decisions regarding resource allocation
  - Roadway Investments
  - Education and Enforcement Programs
  - Needed Research
- Establish/improve state and local policies

Problem Recognition

- Early '90's – reduction in quantity and quality of data being collected
- 1998 – AASHTO *Strategic Highway Safety Plan*
  - Management core element – improve information and decision support systems
- 2003 – FHWA and AASHTO sponsored International Safety Data Scan
  - Team visited Europe and Australia
  - Final report developed
- 2004 – FHWA funded first steps of implementation plan - "White Paper"

White Paper Goals

- Build upon the recommendations from the International Safety Scan

- Expand the strategies for improving safety data and information systems

- Provide specific action items to implement these strategies

Overview of Broad Strategies

- Increase support for safety programs and safety information systems

- Define "good inventory data" and move toward the use of performance measures

- Make it easier to collect, store, and use data.

- Increase the use of safety analysis tools.

- Link safety data to non-safety data.

Increase Support

- Sell safety <u>programs</u> to the public to "force/demand" improved data.
  - Marketing campaigns – public awareness of the national health problem
  - Public surveys – active participation, but how knowledgeable?
  - USRAP – modeled after EuroRAP
    - Risk Mapping (crash histories)
    - Star Ratings for roads (road audits)

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Increase Support (cont)

- Sell safety <u>data</u> to administrators
  - Traditionally – not high on the priority list for administrators
  - But current changes may help
    - Performance-based budgeting
    - Asset management systems

Increase Support (cont)

- Market improved safety data to non-safety "power players"
  - Asset Management
  - Maintenance (pavement condition, pavement markings, etc.)
  - Planning (land use, development, etc.)
  - Legal Staff
    - Litigation - more data = better defense?
    - Clarification and marketing of 409 protection

Increase Support (cont)

- Market data-improvement knowledge to those in charge of data (focus on non-crash data)
  - Develop a knowledge-base of best practices
  - Disseminate information via newsletters and meetings
  - Invitation-only meeting of non-crash data managers

Inventory Data & Performance Measures

- Develop definitions of "good safety inventory data"
  - Need a companion to MMUCC
  - We suggest "MIRE" – Minimum Inventory of Roadway Elements
  - Starting point – IHSDM, HSIS, SafetyAnalyst
  - Scope should include existing and desired data elements (e.g., ped/bike volumes)

Inventory Data & Performance Measures (cont)

- Develop performance measures for collecting and storing critical elements
  - Crash and non-crash
  - Element level (e.g., accuracy of curve radius for a horizontal curve)
  - System level (e.g., changes to a roadway segment entered within X weeks after change)
  - Endorsement of AASHTO

Inventory Data & Performance Measures (cont)

- Increased emphasis on inventory data as part of Traffic Records Assessments
  - Addition of non-crash expertise to the team
  - Provide teams with a list of critical non-crash variables and information on how to improve these data elements

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Inventory Data & Performance Measures (cont)

- Insure integration of "good data" definitions into ongoing XML schemes
  - Critical elements and codes need to be defined by safety experts – not just by information specialists
    - Initial definitions will become the "default"
  - Volunteer effort alone may not suffice (NCHRP 20-64 – XML Schema)

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Make it Easy – Crash Data

- Collection of Crash Data
  - Disseminate widely *Practices in Crash Reporting and Processing*
    - NCHRP Synthesis 350 (DeLucia)
  - Increase use of "high-end" automated crash recorders (e.g., TraCs)
    - Research to determine what would accelerate such use
  - Increase accuracy of data
    - On-board expert systems
    - Research on Officer training/incentives

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Make it Easy – Non-Crash Data

- Collection of Non-Crash Data
  - Increase use of *validated* collection technologies
    - No existing certification process
    - FHWA/AASHTO "technical guidance"
  - Develop new technologies and create a "technology clearinghouse"
    - Part of USDOT safety data technology clearinghouse (one point shopping)
  - Identify alternative data sources

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Safety Analysis Tools

- Market existing and future tools
  - IHSDM, SafetyAnalyst, Highway Safety Manual
  - AASHTO and ITE endorsement and publicity to its members
  - "Lead State" concept
  - Training scholarships
- Develop the next generation of tools

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Linking Crash and Non-Crash Data

- Goals
  - Better linkage of all safety data
  - Better "protection" for critical non-safety data items
  - Easier access to new non-crash (inventory) data

- Data Warehouse
  - Central repository of data – insures linkability
  - Safety components are less likely to be cut
  - Facilitates the building of a safety "knowledge base"
  - Need for a "primer" on how to do this successfully (or how <u>not</u> to do it)

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Linking Crash and Non-Crash Data (cont)

- Establish a non-crash data user/owner committee
  - Includes representatives from all safety and non-safety players with linkable data interests
  - Secretariat from the safety engineering office
  - Close coordination (liaison) with TRCC

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Linking Crash and Non-Crash Data (cont)

- Move more rapidly toward a GIS referencing system
  - FHWA technical and monetary assistance to states and municipalities
  - Exploration of increased potential for spatial analysis tool applications

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Linking Crash and Non-Crash Data (cont)

- Local access to data
  - Outreach programs on how to access and use the data (including use of safety analysis tools)
  - Incentive programs for data collection and submission (data-for-data partnerships)

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Summary

- "Sound" decision-making for resource allocation is dependent on safety data (crash and non-crash)

- Moving toward *performance-based* programs and *fact-based* decisions

- Current state of data and systems will not meet these needs, as recognized by AASHTO

- SAFETEA-LU mandates improvements in safety data

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Summary

- Strategies outlined will address the need for better data and systems

- Will require resources, but the investment will be worth it

- More details in the paper on:
  - Short-term, Mid-Term and Long-Term
  - Responsible organization (AASHTO, FHWA, NHTSA, State DOT, partnerships)

Next Steps

- Dissemination of White Paper
- Preparation of final implementation documents
    - Update of AASHTO Strategic Plan goals on information and decision support systems
- Implementation of strategies
    - Two NCHRP problem statements already submitted

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